

ISO 9001:2015	Document No: TM/HM/6/539	Version No:1.0	Date effective: 11/10/23
Specification of Squeezing Cylinder Body (Female) of Unimat-4S (Part no W37.2053)			



RESEARCH DESIGNS AND STANDARDS ORGANISATION
Manak Nagar, Lucknow-226011

Track Machine and Monitoring Directorate

SPECIFICATION NO. TM/HM/6/539

SPECIFICATION OF SQUEEZING CYLINDER BODY (FEMALE)
OF UNIMAT-4S
(PART NO. W37.2053)

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- 1.0 Scope:** This specification covers the dimensional, functional, and material requirements with testing criteria of Squeezing cylinder body (female) of Unimat tamping machine. This specification may be treated as provisional subject to modifications based on service performance.
- 2.0 Reference Document:** Following documents have been referred to in this specification. Full set of relevant drawings and the referred codes/ specifications duly incorporating the updated corrections / amendments shall be available for reference at manufacturer's work.
- i) BS:970 (Pt.II)-1970 - Specification of direct hardening of alloy steels.
 - ii) IS: 77- 1976: Linseed oil for paints specifications.
 - iii) Drawing No: RDSO/TM/09/23 Squeezing cylinder body (female).
- 3.0 Functional Requirement:** Squeezing cylinder body (female) is provided in tamping unit of Unimat tamping machine. It shall be capable to hold all its components under 2100 rpm i.e.35 Hertz of vibration during tamping and squeezing of ballast with the help of tamping tools under the track at 150 Kg / cm² hydraulic pressure. All surfaces meant for machining shall be finished as mentioned in the Drg. No. RDSO/TM/09/23.
- 4.0 Dimensions and Tolerance:** Dimension and tolerance of Squeezing cylinder shall be as mentioned in drawing no. RDSO/TM/09/23.
- 5.0 Material:** Squeezing cylinder shall be made from Grade 709M40 (EN-19) conforming to BS:970 (Pt.2) 1970 Specification direct hardening of alloy steels.
- 6.0 Manufacturing Process:** Squeezing cylinder shall be made by closed die forging only under belt drop forged hammer of adequate capacity, capable of delivering minimum energy or force required for deformation during closed die forging of closing cylinder body.
- 7.0 Heat treatment:** Forged body shall be heated up to 950⁰ C and temperature shall be maintained stable for 90 minutes then furnace shall be put off for half an hour followed by controlled heating at 860⁰ C for one hour. There after complete forged cylinder body shall be cooled in furnace it self for stress relieving.

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8.0 Marking: Month and year of manufacture and manufacturer's code/ identification shall be engraved / embossed on the non-functional surface of each Squeezing cylinder body.

9.0 Inspection and Acceptance Criteria:

- i) Each cylinder body offered by manufacturer shall be checked visually for their surface finish, freedom from defect like porosity, cracks, improper edges etc. Machined surface shall be checked by any suitable pneumatic or electronic equipment.
- ii) The component found suitable after visual inspection shall be checked for their dimensional characteristics as per relevant drawing.
- iii) If required, randomly, non-destructive testing shall be carried out by Railway representative as given below.
 - a) Ultra sonic examination.
 - b) Magnetic particle examination.
 - c) Liquid penetration examination.
 - d) Radiographic examination.

Above facilities shall be made available/ provided by the manufacturer

- iv) Minimum one no or 2 % sample of the Squeezing cylinder body (female) randomly picked up out of each lot of consignment and shall be subjected to chemical composition test. The consignee shall test the material for chemical composition at his laboratory or get the material tested in a reputed (NABL accredited or accredited by other international body like APLAC, MRA, ILAC etc) laboratory having proper facilities for testing. Before sending the samples for testing, the same shall be duly sealed and secret coding shall be done.
- v) Any deviation in the test result shall be the cause of rejection.

10.0 Packing and Protection: All the non functional surface of the Cylinder body shall be painted in two coats with golden yellow colour of general purpose synthetic enamel paint by spray painting and functional surface shall be protected with one coat of boiled linseed oil conforming to IS: 77-1976 (Linseed oil for paint). The oil holes shall be protected with plastic cap. Each component shall be packed in cardboard case.

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